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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,368	09/23/2003	Takafumi Noguchi	Q75436	9196

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EXAMINER

CHOI, JACOB Y

ART UNIT	PAPER NUMBER
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2875

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,368

Applicant(s)

NOGUCHI, TAKAFUMI

Examiner

Jacob Y. Choi

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-8, & 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishihara et al. (US 2003/0048072).

Regarding claim 1, Ishihara et al. discloses a light-emitting portion having a higher refractive index than a refractive index of air [0007; "... *refractive indices of the organic layers, the first transparent electrode and the glass substrate are around 1.6, 2.0 & 1.5 ... etc.*", 0021, 0022; "... *the counter substrate is also intended to extract the light produced in the organic electroluminescent substrate into the air layer with a refractive index of 1. It is therefore desired that the counter substrate be formed of a material with a high visible light transmissivity ... the material may include, but not limited to ... etc.*"], and a diffraction grating structure [0059; "... *the holes and electrons injected into the light-emitting layer recombine to produce excitons which diffuse in the light-emitting layer ... etc.*"] provided to a light-emitting side surface of the light-emitting portion, wherein a minimum light-emission value is equal to or less than 50 % of a

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maximum light-emission value [0060; "... *the light is not affected by the classic optics ... there is no loss due to total reflection, improving the light extraction efficiency ... etc.*"] when white light is emitted from the light-emitting portion.

Note: claims in a pending application should be given their broadest reasonable interpretation. *In re Pearson*, 181 USPQ 641 (CCPA 1974).

Regarding claim 2, Ishihara et al. discloses a color separation filter [0029, 0117, 0120] provided between the light-emitting portion and the light-emitting side surface, wherein a minimum value of a spectral product obtained from a light-emission waveform of the white light emitted from the light-emitting portion and a spectral transmittance of the color-separation filter is equal to or less than 50 % of a maximum value thereof, whereby the minimum light-emission value is equal to or less than 50 % of the maximum light-emission value when the white light is emitted from the light emitting portion.

Regarding claim 3, Ishihara et al. discloses a color-separation filter which has minimum transmittance of equal to or less than 50 % of maximum transmittance is used for the color-separation filter [0029, 0117, 0120 & 0060].

Regarding claim 4, Ishihara et al. discloses the light-emitting portion includes light-emitting materials for at least two primary colors (R, G, B) capable of emitting the white light among light-emitting materials for three primary colors [0029, 0117, 0120].

Note: it has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Regarding claim 5, Ishihara et al. discloses a light-emission ratio of the light-emitting materials for the at least two primary colors among the light-emitting materials for the three primary colors is adjusted to make the minimum light-emission colors is adjusted to make the minimum light-emission value equal to or less than 50 % of the maximum light-emission value when the white light is emitted from the light-emitting portion [0029, 0117, 0120 & 0060].

Regarding claim 6, Ishihara et al. discloses the light-emitting portion includes the light-emitting materials for the three primary colors [0029, 0117, 0120].

Regarding claim 7, Ishihara et al. discloses the light-emitting materials exhibit light emission by singlet exciton [0006, 0059].

Regarding claim 8, Ishihara et al. discloses the light-emitting materials exhibit light emission by triplet exciton [0006, 0059].

Regarding claim 11, Ishihara et al. discloses the light emitting portion includes light-emitting materials (e.g., Filter(s)) for at least two primary colors emitting the white light [0122] among light-emitting materials for three primary colors [e.g., 0117; "... color filters 316, 316' are formed on the glass substrate 318 ... the color filters were formed in stripes by etching and arranged in the order of red, green and blue ... etc."]

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobori (USPN 6,327,554) in view of ODA et al. (US 2002/0180348).

Regarding claim 1, Kobori discloses a light-emitting portion having a higher refractive index than a refractive index of air [7, 8], wherein a minimum light-emission value is equal to or less than 50 % of a maximum light-emission value when white light is emitted from the light-emitting portion.

Kobori failed to disclose the details of a diffraction grating structure provided to a light-emitting side surface of the light-emitting portion.

ODA et al. teaches a diffraction grating formed as a constituent element on the organic electroluminescent device.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify teachings of Kobori with a diffraction grating element of ODA et al. to improve the light extraction efficiency of the device and its viewing angle(s), also it is preferable for the grating structure with less internal reflection by adjusting the index of refraction in order to prevent light emitted from the organic EL being reflected at the grating structure and traveling backward.

Note: it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 2, Kobori discloses in view of ODA et al. discloses the claimed invention, explained above.

In addition, Kobori discloses a color separation filter [71-74] provided between the light-emitting portion and the light-emitting side surface, wherein a minimum value of a spectral product obtained from a light-emission waveform of the white light emitted from the light-emitting portion and a spectral transmittance of the color-separation filter is equal to or less than 50 % of a maximum value (*at least 50 % in a wavelength region of 300 to 700 nm*) thereof, whereby the minimum light-emission value is equal to or less than 50 % of the maximum light-emission value when the white light is emitted from the light emitting portion.

Regarding claim 3, Kobori discloses in view of ODA et al. discloses the claimed invention, explained above.

In addition, Kobori discloses a color-separation filter [71-74], which has minimum transmittance of equal to or less than 50 % of maximum transmittance is used for the color-separation filter.

Regarding claim 4, Kobori discloses in view of ODA et al. discloses the claimed invention, explained above.

In addition, Kobori discloses the light-emitting portion includes light-emitting materials for at least two primary colors capable of emitting the white light among light-emitting materials for three primary colors.

Regarding claim 5, Kobori discloses in view of ODA et al. discloses the claimed invention, explained above.

In addition, Kobori discloses a light-emission ratio of the light-emitting materials for the at least two primary colors among the light-emitting materials for the three

primary colors is adjusted to make the minimum light-emission colors is adjusted to make the minimum light-emission value equal to or less than 50 % of the maximum light-emission value when the white light is emitted from the light-emitting portion.

Regarding claim 6, Kobori discloses in view of ODA et al. discloses the claimed invention, explained above.

In addition, Kobori discloses the light-emitting portion includes the light-emitting materials for the three primary colors.

Regarding claim 7, Kobori discloses in view of ODA et al. discloses the claimed invention, explained above.

In addition, Kobori discloses the light-emitting materials exhibit light emission by singlet exciton [47].

Regarding claim 8, Kobori discloses in view of ODA et al. discloses the claimed invention, explained above.

In addition, Kobori discloses the light-emitting materials exhibit light emission by triplet exciton [47].

Regarding claims 9 and 10, Kobori in view of ODA et al. discloses the claimed invention, explained above.

In addition, ODA et al. discloses the diffraction grating structure has a pitch of a fine convex-concave structure being in various range in μm .

ODA et al. fails to specify the workable range of the diffraction grating structure, such as a pitch of 1 μm to 4 μm and a depth of 0.4 μm to 4 μm .

It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the workable range of the diffusion grating to improve the light extraction efficiency of the device, also it is preferable for the grating structure with less internal reflection by adjusting the index of refraction in order to prevent light emitted from the organic EL being reflected at the grating structure and traveling backward, and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 11, Kobori in view of ODA et al. discloses the claimed invention, explained above. In addition, Kobori discloses the light-emitting portion includes light-emitting materials (e.g., column 20, lines 1-20; "... *an optical thin film such as a dielectric multilayer film may be used ... gives out light from the phosphors contained therein for the color conversion of light emission, and is composed of three components, a binder, a fluorescent material and a light absorbing material ... etc.*") for at least two primary colors emitting the white light among light-emitting materials for three primary colors.

Regarding claim 12, Kobori in view of ODA et al. discloses the claimed invention, explained above. In addition, Kobori discloses a color-separation filter (e.g., column 20, lines 1-20; "... *the substrate may be provided with a color filter film ... it is preferable to control the properties of the color filter in conformity to the light emitted from the organic EL device ... thereby optimizing the efficiency of taking out light emission and color purity ... etc.*").

Kobori failed to suggest a spectral transmission of the color-separation filter is proximately 7% of a maximum value.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to signify the spectral transmission of the filter, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

5. Claims 9, 10, & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara et al. (US 2003/0048072).

Regarding claims 9 and 10, Ishihara et al. discloses the diffraction grating structure has a pitch of a fine convex-concave structure being in various range in μm .

Ishihara et al. fails to specify the workable range of the diffraction grating structure, such as a pitch of 1 μm to 4 μm and a depth of 0.4 μm to 4 μm .

It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the workable range of the diffusion grating to improve the light extraction efficiency of the device, also it is preferable for the grating structure with less internal reflection by adjusting the index of refraction in order to prevent light emitted from the organic EL being reflected at the grating structure and traveling backward, and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 12, Ishihara et al. discloses a color-separation filter (e.g., claim 11; "... an organic light-emitting element according to claim 2, wherein color filters are formed between the organic electroluminescent substrate and the counter substrate ... etc." & [0029, 0100, 0117, 0120, 0122, 0125, 0129, 0138, 0139]).

Ishihara et al. failed to suggest a spectral transmission of the color-separation filter is proximately 7% of a maximum value.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to signify the spectral transmission of the filter, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

6. Applicant's arguments filed December 20, 2005 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "a minimum light-emission value is equal to or less than 50% of a maximum light-emission value") the general condition conditions of the claim are disclosed in the prior art, (e.g., Ishihara et al. US 2003/0048072), where in paragraph [0060; "... *the light is not affected by the classic optics ... there is no loss due to total reflection, improving the light extraction efficiency ... etc.*"]. From the following passage, the maximum value is considered to be near 100%. The examiner believes a minimum light-emission

value is equal to or less than 50% of a maximum light-emission value is clearly taught by the prior art (underlined).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the electron ejecting electrode is emitting light itself that is a minimum light-emission value equal to or less than 50% of a maximum light-emission value when white light is emitted") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Response to Amendment

7. Examiner acknowledges that the applicant has attempted to add new claims 11-12. Claims 1-12 are pending in the application.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a):

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Y. Choi whose telephone number is (571) 272-2367. The examiner can normally be reached on Monday-Friday (10:00-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JC


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